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Laboratory testing in general practice: a patient safety blind spot

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Physicians order a lot of tests in primary care. We use tests to diagnose patients' complaints, monitor chronic diseases, check medication levels and screen for health risks and early disease. Sometimes, even in the office setting, the result for a test can be a matter of life or death. But more often, whether the results get reviewed by the physician and to the patient today, tomorrow or even next week, may not matter much to the physician or to the patient. Unfortunately, this laisser-faire attitude about test results has led to clinical offices where missing and lost test results, no patient notifications and lack of follow-up constitute the norm.

In the USA, studies in the late 1990s began delineating problems in the primary care testing process.[1–3] In the following decade and a half, work by several teams of researchers brought more clarity about testing process errors, the harms they may cause and the role of cascading errors, mitigation and recovery.[4–15] Litchfield *et al*[16 17] set out to understand the status of the testing process in British general practice (GP) offices. Using focus groups of patients and GP staff, the authors previously published the separate views of the two groups about how test results are communicated to patients by the offices. In their current studies published in *BMJ Quality & Safety* journal,[18 19] they present suggestions offered by GP staff and patients to improve the testing process and describe the findings of a survey of GP office staff (lead receptionists, practice managers) in order to expand our understanding of how test results are communicated with patients in GP offices.

The new studies have some significant limitations, including an inability to populate the focus groups with the purposeful sample desired, no attempt to reach data saturation, and a convenience sample for the survey. Nonetheless, the studies' findings pass what one might call a 'sniff test'—they are believable and clinically convincing.[20] The detailed descriptions and rich participant quotes add credibility—a key criteria in evaluating qualitative research.[21 22] The findings are also highly consistent with results from previous studies. For example, in our own 2006 study of testing process problems as seen by physicians and their staff, a participant noted that, "if a patient doesn't call and say, I haven't heard about my test results, we really don't know that they're not back."[6] Similarly, quoting a GP in a study by Litchfield,[19] "If the patient hasn't called for the result we may never know that they didn't get the result."

The fact that the problems described in these articles continue to plague primary care practices and their patients requires an understanding of some of the key factors in the sociotechnical work system of the testing process in primary care: physicians and staff and their work culture; testing process technology; and patients and families and their culture.

An important advance of patient safety over the last two decades has been an understanding of team dynamics in achieving safe, quality patient outcomes. While originating in fast moving and time limited areas like emergency departments, intensive care units and operating rooms, team based care is a key component in the Patient Centered Medical Home movement in the USA and elsewhere.[23] But with regards to the primary care testing process, Litchfield[18 19] reveals a linear set of tasks performed by individuals often unaware of the steps that occur before or later in the process, a situation noted in other studies as well.[7 8 24] And the testing process doesn't occur over hours, as in the hospital, but over days and even weeks. Everyday in primary care practice, information chaos, including information on

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test orders and results, is the norm. As described by Beasley *et al*,[25] information chaos consists of information overload, underload, scatter, conflict and erroneous information and leads to impaired situational awareness and increased mental workload. Missing laboratory results are a common part of the underload; they were reported in 6.1% of all office visits in a Colorado study.[26] Frequent minimally abnormal findings are part of the overload; fewer than half of abnormal glucose values were followed up in primary care study of laboratory results in non-diabetic patients.[27] When overwhelmed by such information chaos, without a functioning team to help put some order to the chaos, individual physicians have to make decisions about where to focus their limited time and energy. As these studies of the testing process reveal, GPs often depend on untrained and ill-prepared staff to relay clinical information to patients and on patients to tell them when results are missing.[18 19] Although missing or delayed test results have traditionally been seen by researchers as medical errors, they are not necessarily perceived that way by practicing physicians. Because these events rarely lead to significant patient harm, occur commonly and are part of a complex system, practicing physicians are much less likely to consider them medical errors at all, and thus tolerate the frequent problems in their practices.[28]

In the early 2000s, at least in the USA, primary care physicians hoped that electronic health records (EHR) would provide the answer to their ongoing frustrations with testing process problems.[6] This obviously has not proven to be the case, or British GPs, most of whom have had electronic records longer than their American counterparts, would not be having the problems described by Litchfield *et al*. Yet technology does need to be part of the solution, especially for two areas described by Litchfield[18 19] as the lack of a 'failsafe' or tracking system (assuring that every test order results in a test result) and patient notification of test results.

The electronic transfer of orders and results has decreased lost and misplaced paper forms and misfiles. Too often, however, EHRs integrate these two processes without thoughtful functionalities for automated tracking between orders and results, as well as automated alerts for orders that don't match to a timely result.[9] This leaves practices having to develop their own tracking systems, using valuable staff time and resources. Technology can also assist in the transmission of results to patients. While not all patients have access to or comfort with computers, a significant number do, and patient portals offer a way for physicians to communicate with many patients in a timely manner, especially for normal results. Patients are generally most pleased with direct physician communication of test results, but they also know that is not realistic and express satisfaction with any of a number of options, including patient portals and other electronic methods.[29–33] Not surprisingly, in no studies did patients express a preference for calling for their own results, the most common method used in the GP offices as reported by Litchfield.[19] This is a serious and important issue for British GPs, and if this small sample is indicative of the majority of practices, then GP patients are at significant risk of not being notified of important results that can affect their health. While it is appropriate for patients to serve as double checkers, ("if you don't hear from us with your results in 5 days, please call us"), it is inappropriate for physicians and staff to offload their responsibility for timely and appropriate communication of test results onto their patients.

Online access by patients to their own records, including test results, is rolling out across Britain now, and the lack of such practices in the Litchfield *et al* studies is a weakness. Further studies including offices already using online portals for patients could help GPs best transition to a system that uses technology well and doesn't embrace more errors. Just as EHRs that don't have automatic tracking of test orders don't help GPs failsafe their testing process, neither does an online patient portal that doesn't automatically report whether patients have logged in and viewed their results.

The inclusion of patients in the studies of GP testing process is important to understand the entire process. Unfortunately, while these studies confirm the problems experienced by GP's patients in navigating the testing process, they don't tell us what patients are doing about these problems. Patient-centred care would have us revolve our care around the patient, not the physician. Empowering patients to know what tests are being recommended and how the results will inform care, with shared decision making about test ordering may make patients more likely to complete the test, and to better understand the results they receive.[34] Whether results are relayed by a phone call, letter or via an online patient portal, patients want to know what the result means for them, and what actions, if any, they should take on the result.[30] We need further research to delineate the best ways for GP offices to advance from (1) having results available in the office for patients who call, to (2) notifying every patient of every result, to (3) partnering with patients to make the results and the physician's interpretation and recommendations part of shared decision making around care. So why aren't patients clamouring for such a system? A small study of patients experiencing preventable problems in primary care found that patients' behavioural responses fell into four categories: avoidance (eg, stop going to the doctor), accommodation (eg, learn to deal with delays), anticipation (eg, attend to details) and advocacy (eg, try to make a change).[35] Patients in these studies described several of these responses around

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the testing process, especially accommodation (making the appointment at the reception desk, but knowing it will be a 2 week wait) and anticipation (not accepting results from a receptionist unless it is a cholesterol).[18] Improving the GP testing process also means helping our patients become self-advocates for their own patient safety by involving them in care and shared decision making.

Laboratory testing will remain a common and important part of primary care. Unfortunately, for British GPs, these studies demonstrate that advances in patient safety in the last 20 years seem to have bypassed the testing process in primary care. By shedding needed light on dysfunctional processes, there is hope that patients, physicians and staff, together with advances in technology, will find ways to ensure that laboratory testing becomes patient-centred, and that ordering, tracking, patient notification and follow-up processes are transformed into safe practices that enhance patient care.

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